

# EXHIBIT A

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF NEW MEXICO**

DINÉ CITIZENS AGAINST RUINING  
OUR ENVIRONMENT, *et al.*,

Plaintiff,

v.

DAVID BERNHARDT, *et al.*,

Federal Defendants.

Case No. 1:19-cv-00703

Declaration of Mark Matthews

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1. I, Mark Matthews, am the Acting District Manager of the Bureau of Land Management (BLM) Farmington District Office, which includes the Farmington Field Office (FFO). I am more than 18 years old and competent to make this Declaration.

2. In 1985, I received a B.S. in Agriculture, Major Range Science from New Mexico State University. I have been employed by the BLM since 1988. I worked in the Range Program until 2007, when I became an Assistant Field Manager in the Socorro Field Office. In 2014, I transitioned into the Field Manager Position in the Socorro Field Office.

3. In June of 2018, I started my current position of Acting District Manager for the Farmington District Office for the BLM. Through the FFO, BLM manages the active oil and gas leases on federal land in the San Juan Basin. As part of my duties I am responsible for providing leadership, motivation, direction and decisions including technical and administrative supervision of assigned employees including the Field Managers of the Farmington and Taos Field Offices in implementing BLM policies, programs and mission. I am responsible for the day to day operations as well as prioritizing workloads for the short and long term in coordination with the New Mexico State Office. I am also generally familiar with the litigation brought in *Dine Citizens Against Ruining Our Environment v. Jewell*, No. 1:15-CV-00209-JBLF

(D.N.M) and the subsequent appeal in *Dine Citizens Against Ruining Our Environment v. Bernhardt* (Dine CARE I) regarding certain National Environmental Policy Act (NEPA) documents issued by the FFO, as well as the work that the FFO subsequently completed pursuant to the court's decision in that litigation.

4. The BLM's management of public lands is governed by the Federal Land Policy and Management Act (FLPMA), 45 U.S.C. § 1702. FLPMA directs the BLM to manage public lands "under principles of multiple use and sustained yield." 43 U.S.C. 1732(a). FLPMA further directs that "the public lands be managed in a manner which recognizes the Nation's need for domestic sources of minerals, food, timber, and fiber from the public lands...." 43 U.S.C. 1701(a)(12).

5. The BLM's analysis of oil and gas development is a three-part process, including the Resource Management Plan (RMP), Leasing, and Application for Permit to Drill (APD). The BLM's management of oil and gas resources is governed, inter alia, by FLPMA and the Mineral Leasing Act of 1920 (MLA), 30 U.S.C. §§ 225-226.

### **Oil and Gas Development on Federal Lands**

#### **I. Resource Management Planning**

6. To achieve the goals of multiple use and sustained yield, FLPMA requires BLM to "develop, maintain and, when appropriate, revise land use plans," 43 U.S.C. 1712(a), known as an RMP. An RMP is a written document that addresses such issues as: (1) land areas designated for limited, restricted, or exclusive use; (2) allowable resource uses and related levels of production or use; and (3) resource condition goals and objectives to be attained. 43 U.S.C. 1712(a); 43 C.F.R. 1601.0-5(k)(1)-(3), (5)-(6). An RMP is revised or amended "when

appropriate,” 43 U.S.C. 1712(a), based on monitoring and evaluation findings, new data, or changes in policy or circumstances affecting the area managed and its resources.

7. Actions taken by BLM must conform to the governing RMP. 43 U.S.C. 1712(e); 43 C.F.R. 1610.5-3(a). In the oil and gas context, the RMP determines where and under what conditions oil and gas exploration, development, and utilization activities will be permitted in accordance with policies and procedures set forth in BLM’s planning regulations and manual guidance. The RMP identifies areas closed to leasing, as well as areas open to leasing subject to standard terms and conditions, moderate constraints, or major constraints. These constraints are the basis for the timing, controlled surface use, and no surface occupancy stipulations that are attached to federal oil and gas leases. The RMP also identifies certain Best Management Practices and other requirements that will be applied to the operator at the time that BLM reviews and approves an APD.

8. The BLM has a statutory responsibility under the National Environmental Policy Act (NEPA) to analyze and document the direct, indirect and cumulative impacts of past, present and reasonably foreseeable future actions resulting from federally authorized fluid mineral activities. By law, these impacts must be analyzed before the agency makes an irreversible commitment at the point of lease issuance.

9. It is BLM policy that existing land use plan decisions remain in effect until an amendment or revision is complete or approved. *See* IM 2018-034, available at: <https://www.blm.gov/policy/im-2018-034>.

## **II. Review of APDs**

10. Leases for the challenged APDs were issued between October of 1946 and July of 2012. Any lease issued prior to 1969 predates NEPA. As such, an environmental analysis

would not have been performed at the leasing stage. The impacts of development on those undeveloped leases was captured during land use planning in the FFO, most recently under the 2003 Farmington RMP/Final Environmental Impact Statement (FEIS), which analyzed the impacts of development from an additional 9,942 wells. Excerpts from a true and correct copy of the 2003 Farmington RMP/Final Environmental Impact Statement (FEIS) with record of decision are attached as Exhibit D.

11. Operators must submit an APD for every well that they intend to drill on federal minerals. Operators cannot proceed with drilling until the APD is approved by the BLM. As required by Onshore Order #1, the APD must include a Drilling Plan and a Surface Use Plan of Operations. 43 C.F.R. 3162.3-1(d). The drilling plan includes information on geologic groups/formations, blowout prevention equipment, proposed casing program, testing and coring procedures, expected bottom hole pressure, and well design. The surface use plan includes requirements to provide plans for the improvement and/or maintenance of existing roads, design features for any new roads, location of existing wells, location of existing and/or proposed production facilities, location and types of water supply, construction materials, methods for handling waste, ancillary facilities, surveyed well site layout, plans for surface reclamation, surface ownership, and other information.

12. Before deciding whether to approve an APD, BLM prepares documentation of NEPA analysis, which is intended to help public officials make decisions that are based on an understanding of environmental consequences, and take actions that protect, restore, and enhance the environment (40 CFR 1500.1(c)). The BLM may approve the APD as submitted, approve it with appropriate mitigations, design features or conditions (conditions of approval), or deny it. *Id.* at 3162.3-1(h).

13. The NEPA environmental assessment (EA) process results in one of three outcomes: (1) a conclusion that the proposed action or selected alternative would result in a significant environmental impact, necessitating additional analysis under NEPA, (2) a conclusion that the proposed action or selected alternative with all associated design features, mitigation measures and conditions of approval would not result in a significant environmental impact—a “finding of no significant impact” (FONSI), or (3) a conclusion that the proposed action or selected alternative will not go forward, by selection of the no action alternative. 43 C.F.R. § 46.325. A single EA analyses the proposed action, a no action alternative and any other alternative to that proposed action. The proposed action and the alternatives may contemplate multiple wells and future potential development. The BLM commonly contemplates and analyzes the potential effect of many more wells than are actually applied for via an APD. Furthermore, the approval of an EA does not mean that an APD will be approved, APDs must still undergo separate reviews pursuant to Onshore Order No. 1 requirements.

14. The APD establishes the site-specific design features under which exploration, development, production, plugging and reclamation (final abandonment) will be permitted on specific projects within valid federal leases. The NEPA process determines if lease stipulation waivers, exceptions or modifications are warranted. *See* BLM IM 2008-032, available at: <https://www.blm.gov/policy/im-2008-032>. All site-specific determinations must conform to the applicable RMP.

15. Approved APDs will contain design features (such as the Surface Use Plan of Operations) and will come with Conditions of Approval attached by the BLM that reflect necessary measures to mitigate environmental, health, and cultural impacts, as required by the BLM. 43 C.F.R. §§ 3101.1-2, 3162.3-1(h).

16. In the FFO (as in all other Field Offices), APD approval follows a rigorous process. After the Notice of Staking (NOS) or APD is received, an onsite meeting is scheduled with the operator (proposed action proponent) within 10 days. The onsite includes BLM Inter-Disciplinary Team staff, the Proponent and all of their subcontractors, any third-party environmental consultants, any other potentially effected operators, any interested members of the public, any land owners or Native American Indian allottees as well as any affected grazing permittees.

17. The FFO posts pending projects on E-planning as analysis or documentation progresses, to notify the public here:

([https://eplanning.blm.gov/eplfrontoffice/eplanning/nepa/nepa\\_register.do](https://eplanning.blm.gov/eplfrontoffice/eplanning/nepa/nepa_register.do)).

### **III. Post Approval management by the BLM**

18. Even after an APD has been approved, the BLM may issue orders and Notices to Lessees to govern specific operations. 43 C.F.R. 3160.0-5, 3161.2. When an RMP is revised after approval of a lease or an APD, those revisions may apply to existing leases and new site-specific activities (such as a new operation of existing roads or wells). 43 C.F.R. 1610.5-3(b).

19. The BLM conducts inspections prior to surface disturbance, construction, drilling, interim-reclamation, production, plugging and final-reclamation. Inspections ensure compliance with applicable laws, regulations, lease terms, the APD and its conditions of approval, Onshore Oil and Gas Orders, Notices to Lessees, and other orders of the BLM Authorized Officer. Operators that do not comply with any of the above standards are subject to enforcement actions applied by the BLM, including Incidents of Noncompliance, Assessments, Shut-In Orders, Plugging Orders and Civil Penalties.

20. Operators must obtain BLM approval for plugging of a well through sundry NOI (Notice of Intent), and a surface plan for the testing and remediation of any surface contamination and the reclamation of all disturbance and equipment is required as a part of the Surface Use Plan of Operations associated with the APD. The reclamation plan must address interim (performed after a well is done with drilling and completion) and final reclamation (performed after a well has been permanently plugged), including soil treatments, seeding, weed control, and practices necessary to restore all disturbed areas to their natural condition.

#### **IV. 2003 Farmington Field Office RMP**

21. The San Juan Basin is one of the largest natural gas fields in the nation and has been under development for more than 60 years. The San Juan Basin straddles the borders of Colorado and New Mexico and is comprised of approximately 16,000 square miles. The New Mexico section includes portions of McKinley, Sandoval, and Rio Arriba Counties, and all of San Juan County.

22. Over 37,000 oil and gas wells have been drilled in the San Juan Basin and there are currently over 27,000 active wells, which in 2017 produced over 464 million cubic feet of gas and 5.9 million barrels of oil. Cumulatively from the Mancos-Gallup RMPA Planning area, as of 2017, 202,312,970 barrels of oil and 31,763,213,158 billion cubic feet of gas have been produced. This production yielded over millions of dollars in royalty revenue to the Federal Treasury of which 49% was disbursed to the State of New Mexico general fund.

23. In August 2000, the BLM FFO initiated the preparation of an RMP revision and an EIS to address the uses of approximately 1,415,200 acres of public land and 3,020,693 acres of



federal minerals in the San Juan Basin. *See* 65 Fed. Reg. 52,781 (2000). The FFO RMP was finalized in 2003.

24. To prepare its analysis for the 2003 FFO RMP, in 2001 the FFO contracted with the New Mexico Institute of Mining and Geology to develop a reasonably-foreseeable development scenario (RFDS) for the San Juan Basin in New Mexico. An RFDS is a baseline prediction of the scale or intensity of impacts from oil and gas development which is likely to occur over the life of the RMP, which is then used by the BLM as a tool to consider the significant impacts on the environment (see BLM Handbook 1624-1 and the “Interagency Reference Guide: Reasonable Foreseeable Development Scenarios and Cumulative Effects Analysis, 2004”). The 2001 RFDS estimated foreseeable oil and gas development for 20 years in the New Mexico portion of the San Juan Basin beginning January 1, 2002.

25. While the development forecasted in the 2001 RFDS was based on historic production data and available geologic and engineering evidence, the 2001 RFDS also contemplated that technological advances could alter development of the Basin during the relevant twenty-year period.

26. The 2001 RFDS predicted that during the twenty-year development window, 2,108 Dakota-Mancos gas wells would be drilled on federal lands. These 2,108 Dakota-Mancos gas wells comprise approximately 21 percent of the 9,942 new oil and gas wells forecasted in the San Juan Basin. The 2001 RFDS also forecasted development for the same twenty year window within the Mancos Shale and Gallup Sandstone formations. With 300 Mancos-Gallup wells comprising 3 percent of the total wells predicted within the 20 year planning period, 180 were forecasted for federal mineral development.

27. The 2003 Farmington RMP was prepared with an associated EIS. Thus, the NEPA and associated public participation processes followed those prescribed for EISs.

a. A Notice of Intent to Plan was published in the Federal Register on August 30, 2000, initiating a comment period ending on October 16, 2000. *See* 65 Fed. Reg. 52781.

b. Three scoping meetings were held between September 26 and October 8, 2000, in Farmington, New Mexico.

c. Section 106 consultation was initiated with 25 Native American tribes and pueblos and 29 Navajo Nation Chapters.

d. A Notice of Availability was published in the Federal Register on June 28, 2002 announcing a 90-day comment period on the Draft RMP/EIS. *See* 67 Fed. Reg. 43682. The Draft RMP/EIS was made available for public review and comment from June 28, 2002 to September 26, 2002.

e. Four public meetings were held for the Draft RMP/EIS between August 26, 2002 and August 29, 2002 in Farmington, Cuba, and Crownpoint (New Mexico) and Durango (Colorado). The BLM FFO received a total of 174 unique written comments and 46 oral comments from 196 individuals. Over 12,000 form letters from at least three organizations were also submitted.

f. A Notice of Availability was published in the Federal Register on April 4, 2003, announcing the thirty-day protest period for the Proposed RMP/Final EIS. *See* 68 Fed. Reg. 16,545. The protest period closed on May 5, 2003.

g. Protests were reviewed by the BLM Farmington Field Office Assistant Field Manager for Renewable Resources and Planning. Twenty-six protests were received. No significant changes to the proposed plan were made as a result of the protests.

28. Based on the forecast in the 2001 RFDS, the 2003 RMP estimated and analyzed long-term cumulative environmental impacts that would result from the selected alternative from the EIS (Alternative D). The approved Alternative D analyzed the cumulative impacts resulting from the development of 9,942 new oil and gas wells with associated long-term surface disturbance of about 16,106 acres. Of those 9,942 wells, the 2001 RFDS considered the possibility of future production in the Mancos Shale, predicting at the time that 300 wells across the basin were possible, and likely 180 of those Mancos Shale wells would be federal mineral estate.

29. Since the implementation of the 2003 RMP which relied on the 2001 RFDS, 4,000 wells have been spud in the FFO planning area, or about 41 percent of the wells predicted and analyzed in the 2003 RMP. The FFO has approved an additional 143 wells that have not yet been drilled (in the AAPD status). 185 wells have been drilled in the Mancos Shale just as the 2001 RFDS forecasted.

30. The 2003 RMP was amended in 2014 by the Farmington Visual Resource Management (VRM) RMP Amendment/EA (RMPA/EA). This amendment changed the “visual resource management classification” of certain areas of BLM-managed lands to increase the level of protection from visual impacts caused by development.

#### **V. Amending the Farmington RMP for Oil and Gas Development**

31. On February 25, 2014, the FFO published a Notice of Intent (NOI) to prepare an amendment to the 2003 RMP. The NOI recognized that improvements in horizontal drilling technology and multi-stage hydraulic fracturing made developing the Mancos Shale formation more economically feasible than when it was considered in the 2001 RFDS and subsequent 2003 RMP. In 2014, the oil and gas industry initially hoped that full-field development of the Mancos

Shale might result in more than 20,000 oil and gas wells—substantially exceeding the 9,942 wells envisioned in the 2003 EIS and RMP.

32. Responding to that projection, the BLM prepared a new RFDS to better predict the Mancos Shale and Gallup Sandstone's potential for oil and gas development, which the BLM completed in 2014. The 2014 RFDS did not match industry's projections—it forecasted only an additional 1,960 oil wells and 2,000 gas wells in the Mancos Shale, most of which would be horizontally drilled, for a total of 3,960 wells.

33. Even aggregated with development that has already occurred within the San Juan Basin, those wells would not exceed the 9,942 wells predicted in the 2003 RMP. Nonetheless, BLM decided to press forward with the RMP amendment, addressing oil and gas development, realty, lands with wilderness characteristics, and vegetation management within the context of horizontal Mancos-Gallup fluid mineral development.

34. The Bureau of Indian Affairs (BIA) joined the BLM's NEPA process for the RMP amendment in October 2016, to analyze BIA-managed mineral leasing and associated activities concurrently with the BLM. *See* 81 Fed. Reg. 72,820 (Oct. 21, 2016). The agencies now expect to complete their analysis in the fall of 2020.

35. The BLM decided to revise the Reasonable Foreseeable Development Scenario for Northern New Mexico (RFDS) (Engler et al., 2014) and the subsequent Update to the Reasonable Foreseeable Development Scenario for Northern New Mexico (Engler, et al., 2015) to better define the spatial and temporal context for projected oil and gas development.

Specifically, the BLM added the following data:

- Annual and cumulative horizontal and vertical well projections
- Annual and cumulative oil and gas production volume estimates

- Surface disturbance estimates over the life of the plan (existing, maximum, and end-of-plan)
- Clearly defined timeframes for the RFDS projections
- Clearly defined spatial boundaries for the RFDS well count projections

This additional information will assist the BLM in preparing NEPA analysis of resource impacts that depend on these projections, including, for example, greenhouse gas emissions as part of Air Quality and Climate Change

The Reasonable Foreseeable Development Scenario for Oil and Gas Activities, Mancos-Gallup RMPA Planning Area, Farmington Field Office, northwestern New Mexico (Crocker and Glover, 2018) provided the additional information listed above with datasets that conform to BLM guidance.

The BLM is using the projections of the 2018 RFDS as a basis for its NEPA analysis for the pending Mancos-Gallup RMPA as well as APDs.

## **HORIZONTAL DRILLING AND HYDRAULIC FRACTURING IN THE MANCOS SHALE**

### **VI. Overview of Horizontal Drilling and Hydraulic Fracturing**

36. Within the recent past, all onshore oil and gas wells were drilled vertically. These same vertical wells would undergo a form of hydraulic fracturing or completion in the producing oil or natural gas reservoir. Vertically-drilled wells are drilled straight down until the oil or natural gas reservoir is reached. As technology developed, operators began drilling wells directionally. Directionally drilled wells allow the wellbore to curve, exposing the wellbore to more of the oil or natural gas reservoir. In the San Juan Basin, directional drilling has been used since the 1990s.

37. Horizontal drilling is a specific type of directional drilling in which the well is drilled vertically until a kick-off-point is reached, where the wellbore turns towards the target natural gas or oil reservoir building a curve (the kick-off point), until at which time the wellbore is turned horizontal at the point of entry, to reach a much wider area of the targeted formation. Horizontal drilling has been used in the San Juan Basin since the early 2000s. In the San Juan Basin, currently, nearly all wells are horizontally drilled.

38. Hydraulic fracturing, or fracking, is a form of wellbore stimulation or completion, and is the process of increasing the extraction potential of oil or natural gas by injecting a mixture of water, nitrogen foam, sand, and certain chemicals under high pressure into well holes in dense rock to create fractures that the sand holds open, allowing the oil or gas to escape.

39. Hydraulic fracturing as a completion technology is utilized in vertical, directional, and horizontal wells. Oil and gas development in the San Juan Basin has involved hydraulic fracturing as well as other forms of completion since the 1950s. Of the over 60,000 oil and gas wells in New Mexico, 95% were developed using hydraulic fracturing. In the San Juan Basin, nearly all wells were developed using hydraulic fracturing. Operators have used horizontal drilling and hydraulic fracturing to develop the Mancos-Gallup formations within the San Juan Basin since 2010.

40. The distinction between past development and current development in the Mancos Shale formation is not that the wells are hydraulically fractured, but that current well completions are (in large part) horizontally oriented along the producing formations, rather than locating completions at the tip of the vertical wellbore (the target producing formation for a vertical well).

41. When combined with horizontal drilling, hydraulic fracturing can allow wells that have been drilled thousands of feet vertically below freshwater supplies, while gradually turning horizontally into rock formations, to stimulate vast oil and natural gas deposits to flow into these new lower pressure gradients created by the fracture system. These same oil and natural gas deposits that were once considered unreachable are now capable of producing at economic quantities.

42. Oil and gas development can be broadly broken into three phases: construction/drilling, production, and plugging/abandonment/reclamation. During the construction/drilling phase, a drilling location is selected, analyzed and permitted; drilling infrastructure and associated roads are built, and equipment is used to drill and complete the well. Any hydraulic fracturing activities occur during this phase. During the producing phase, oil and gas resources are pumped from the well into pipelines and tanks for sale. During shut-in periods or plugging/ final abandonment, oil and gas resources are no longer flowing through the tubing from the wellbore. *See* BLM Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (The Gold Book), at Table of Contents, available at: <https://www.blm.gov/sites/blm.gov/files/uploads/The%20Gold%20Book%20-%204th%20Ed%20-%20Revised%202007.pdf>

43. Some of the most obvious potential environmental impacts from oil and gas development are associated with disturbance in the surface environment, including impacts to soil resources, vegetation, surface waters, noxious weeds/invasive species, and wildlife. The term “completion” as it refers to an oil and gas wellbore, refers to any activity performed at the end of the drilling phase, meant to aid the wellbore in increasing the productive return delivered by the well, or the geologic formation the well is landed in. Completion activities include activities such

as acidization, perforation, and hydraulic fracturing, although many other actions are also wrapped up in the term “completion.” The term wellbore orientation refers to the subsurface pattern of vertical, directional, and horizontal orientations the wellbore for a particular well is depicted as. Orientation in this instance is referencing the orientation of the wellbore within the “target zone,” which is the producing geologic structure. Wellbores may be vertically or directionally drilled to a kick-off-point, and then vertically completed, or horizontally drilled and then completed within their producing formations. All well pads, access roads, and pipelines are similar in their impact, regardless of completion type, or wellbore orientation. The vast majority of these impacts occur during the construction/drilling phase, with far less direct impacts at the production phase.

44. Regarding resources directly impacted by their use in drilling and completion technologies; impacts to water resources are at their greatest during the drilling and completion stages of well development because these resource are being directly impacted/used in the creation of drilling muds, completion fluids, and cement. During drilling and completion there are indirect impacts to air resources from the heavy construction equipment as it builds the pad, road, and pipeline, as well as drills the well. While some indirect impacts to water resources occur from activities such as dust abatement or pipeline testing, these potential uses are fractional compared to the quantities of water used during the drilling phase of all forms of oil and gas development (targeting oil, targeting gas, horizontal, vertical, directional, etc.), in each formation produced. See BLM Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (The Gold Book), at Chapter 5, available at: <https://www.blm.gov/sites/blm.gov/files/uploads/The%20Gold%20Book%20-%204th%20Ed%20-%20Revised%202007.pdf>.



45. Surface development of vertical, directional, and horizontal wells are very similar. A well pad is constructed by removing vegetation and creating a flat surface on which to place the well and any associated facilities. In recent years, horizontal drilling has become a technique used to minimize surface disturbance while maximizing the amount of oil and gas production. Because horizontally drilled wells do not need to be vertically oriented above their target formation, they can access more hydrocarbons than vertical or directional wells due to their extended reach, therefore requiring fewer horizontally oriented wells to be drilled in order to develop a lease, than would be necessary if that lease were developed using traditional directional or vertical wells. Horizontal wells therefore often result in decreased surface disturbance as compared to vertical or directional wells, which is a form of mitigation.

46. Horizontal drilling also allows for the increased co-location of multiple wells. Co-location is the drilling of two or more wells on the same well pad and allows for the maximization of mineral access with limited surface disturbance.

47. The extended reach of horizontal well technology permits operators to access a larger area of a producing formation; one horizontal well pad is can host many wells, in some instances up to 100 or more well-bores, where vertical development requires a new well pad, and therefore access road and pipeline for each well. Thus, even though horizontal well pads tend to be larger than vertical well pads), horizontal wells may disturb far less surface area than vertical wells in the aggregate because one horizontal well pad can host up to 100 or more well-bores on it.

48. Under BLM policy, surface disturbance is required to be further minimized by reclamation of all portions of the well site not needed for production operations within 6 months of initial production, in a practice known as interim-reclamation. *See* BLM Surface Operating

Standards and Guidelines for Oil and Gas Exploration and Development (The Gold Book), at Chapter 6, available at <https://www.blm.gov/sites/blm.gov/files/uploads/The%20Gold%20Book%20-%204th%20Ed%20-%20Revised%202007.pdf>. Excerpts from a true and correct copy of the Gold Book are attached as Exhibit F. After drilling, all areas of the well pad that are not needed for day to day operations are re-contoured back to the natural topography and reseeded. The typical vertical well pad has approximately 0.65 acres of long term disturbance. The typical twinned horizontal well pad will have approximately 1.65 acres of long term disturbance. However, again, because far fewer horizontal wells are required to produce gas and oil, total surface disturbance is actually less when using horizontal wells. Although rare, operators may come back and re-disturb reclaimed lands within the interim-reclaimed portion of the pad at any time throughout operations.

49. The following table displays how horizontal drilling will limit surface disturbance in the FFO even if all of the Mancos Shale wells predicted in the 2014 RFDS and 2018 RFDS are drilled. The left column shows the wells anticipated in the 2003 RMP over a 20-year period, with associated surface impacts. The next columns shows wells and surface disturbances to date. The final two columns depict the anticipated development described in the 2014 RFDS and the 2018 RFDS which largely consist of horizontally drilled wells. At present, 4,000 or 41% of the 9,942 wells anticipated in the 2003 RMP have been drilled. The 2014 RFDS column totals all disturbances to date and all disturbances predicted in the 2014 RFDS. The 2018 RFDS column depicts the same information adjusted for the 2018 RFDS predictions. The total shows that even if every single well predicted in the 2014 RFDS or the 2018 RFDS is drilled, the number of wells, acres disturbed in the short term (for well construction), and acres disturbed in the long

term (over the productive life of the well) are all less than was predicted and analyzed in 2003.

This reduction is due to the impact efficiency of horizontal drilling.

	2003 PRMP/FEIS <sup>1</sup>	To-Date		2014 RFDS <sup>2</sup>		2018 RFDS <sup>4</sup>		Totals	
		Single	Twinned <sup>3</sup>	Single	Twinned	Single	Twinned	2014 RFDS	2018 RFDS
Wells	9,942	2,355	1,505	586	2,344	900	3200	6,790	7,960
Well-pad Type	Single	Single	Twinned	Single	Twinned	Vertical	Horizontal		
Well-pads	9,942	2,355	753	586	1,172	900	1,150	4,865	5,158
Short-Term Surface Disturbance (acres)	31,771	7,524	4,576	3,364	7,125	3,195	7,878	22,590	22,903
Reclamation (acres)	13,194	3,125	3,334	2,397	5,192	1,845	5,003	14,048	13,307
Long-Term Surface Disturbance (acres)	18,577	4,400	1,242	967	1,934	1,350	2,875	8,542	9,867
<sup>1</sup> Table 4-1 of 2003 PRMP/FEIS (page 4-5). <sup>2</sup> Assumes short-term surface disturbance of 5.74 acres for a single well-pad and 6.08 acres for a twinned well-pad. Assumes long-term surface disturbance of 1.65 acres for both types of well-pads. <sup>3</sup> A twinned well-pad is one well-pad supporting two wells. <sup>4</sup> Assumes short-term surface disturbance of 6.25 acres for horizontal (twinned) well-pad and 3.75 acres for vertical (single) well pads. 2.5 acres is considered long-term disturbance for horizontal (twinned) well-pads, 1.5 acres for single vertical well pads.									

50. The 2003 Farmington PRMP/FEIS analyzed the impacts of surface disturbance of future oil and gas development on resources, as well as resource uses in the Farmington Field Office. Oil and gas development has not exceeded the amount of surface disturbance analyzed in the 2003 Farmington PRMP/FEIS.

51. The BLM, in the 2003 Farmington PRMP/FEIS analyzed the anticipated socioeconomic, environmental justice, and health and safety impacts associated with oil and gas development. Since 2003, the FFO has coordinated with local communities regarding

development in the Mancos Shale area. Between 2012 and 2015, the FFO met with local communities extensively. The FFO developed a Socioeconomic Baseline Assessment for the Farmington Mancos-Gallup RMPA and EIS in August 2014. That analysis has been used for the socioeconomic and environmental justice analysis in the EAs for each APD reviewed by the FFO since September 2014.

52. BLM's 2003 Farmington PRMP/FEIS analyzed the anticipated air quality impacts associated with oil and gas development. While there are increased air quality emissions associated with horizontal development, these increases are mitigated by the fact that one horizontal well can replace multiple vertical wells. The impacts of Mancos Shale development are not substantially different from the impacts of other types of development analyzed in the 2003 RMP/FEIS. The 2003 RMP/FEIS took into account directional drilling and hydraulic fracturing because at that time hydraulic fracturing was commonly used and directional and horizontal drilling were expected to be used more frequently in the near future. Additional impacts associated with Mancos Shale development in particular are analyzed in detail in APD EAs.

53. Air impacts are greater at the time of construction/drilling than at any other time in the well's productive life. The heavy construction equipment used to move dirt, and drill the well (the drilling rig) all use combustion motors that have an impact on air quality. Additionally, the truck traffic needed to transport all of the equipment, the workers, and finally the fluids used to drill the well, generally have larger air impacts than any other activity associated with any of the phases of a well's productive life. Air impacts during production are confined generally to any workover activities or the emissions from the truck used by the lease operator during weekly well visits. Compressors, dehydrators, tanks, as well as other production facilities, all contribute

to a minor impact on air quality, though it is minimal compared to the more intense impacts of construction and drilling. Similar construction impacts are experienced during reclamation, although none are associated with drilling and completion. Heavy equipment is used to re-contour and re-seed a location after it has been plugged. Although these are generally the same kinds of equipment used for construction, the time taken to re-claim a location is a fraction of what it takes generally to construct one. *See* BLM Air Resources Technical Report for Oil and Gas Development New Mexico, Oklahoma, Texas, and Kansas (March 2018), [https://www.blm.gov/sites/blm.gov/files/AR\\_Tech\\_Report\\_2018.pdf](https://www.blm.gov/sites/blm.gov/files/AR_Tech_Report_2018.pdf).

Excerpts from a true and correct copy of the 2018 Air Resources Technical Report are attached as Exhibit E.

54. Air quality impacts are also limited by the use of Vapor Recovery Units (VRUs). All the new wells developed by any operator in the Mancos-Gallup play (which are the vast majority of new wells located within that area) use VRUs, and the operators have streamlined the design to maximize separation and capture of light hydrocarbons from the produced oil. These wells use technologies such as heated-separators and vapor recovery towers in conjunction with VRUs to compress the light hydrocarbon gases back into the sales lines. Through this process, the oil going to the tank battery has only a small amount of hydrocarbon emissions that volatilize. Those emissions are controlled with a flare or combustor.

55. Horizontal drilling and hydraulic fracturing can impact groundwater quality if done in close proximity to an aquifer without proper casing and tubing set depth protections. However, development of the Mancos Shale is not expected to impact groundwater because fracturing is expected to be at depths greater than non-saline water exists within the geologic structure of the San Juan Basin. There is a layer of low-permeability rock between the Mancos

Shale formation and groundwater which is believed to generally prevent impacts to surface-water or freshwater-bearing shallower groundwater aquifers being used within the state of New Mexico. Studies have found that “since the advent of hydraulic fracturing, more than 1 million hydraulic fracturing treatments have been conducted, with perhaps only one documented case of direct groundwater pollution resulting from injection of hydraulic fracturing flow-back fluids used for shale gas extraction” *See Impact of Shale Gas Development on Regional Water Quality*, Vidic et al, 2013, p.1235009-6, available at <https://science.sciencemag.org/content/340/6134/1235009.editor-summary>.

56. Recognizing the importance of Chaco Culture National Historical Park (Chaco Canyon) and its associated outliers, the BLM has been deferring new lease parcels from further analysis of BLM land within a 10-mile radius of Chaco Canyon Historic Park until the Record of Decision for the RMPA/EIS is signed. The BLM administers approximately 19% of the land within the 10-mile radius; the rest is administered through the Bureau of Indian Affairs (BIA). The BIA has sole responsibility for leasing Indian trust land. With respects to the wells associated with the 32 EAs challenged in this lawsuit, the closest well to Chaco Canyon is located 7.88 miles away from the Park, and the furthest well is 60.18 miles away. All distances were measured from the main park parcel.

## **VII. The BLM’s NEPA updates since Dine CARE I**

57. On March 11, 2015, plaintiffs Dine Citizens Against Ruining Our Environment, San Juan Citizens Alliance, WildEarth Guardians, and Natural Resources Defense Council filed a petition in United States District Court for the District of New Mexico alleging that the BLM violated the Administrative Procedure Act, NEPA, and the National Historic Preservation Act (NHPA) by approving these projects and others from the FFO.

58. On May 7, 2019, the Tenth Circuit issued its order finding that the BLM did not analyze the cumulative impacts of the water resources anticipated under the most recent RFDS. On May 20, 2019, the BLM began preparing that additional NEPA analysis for four of the five vacated EAs. The project associated with the fifth EA was withdrawn by the project-proponent, and therefore was not re-analyzed. To supplement its NEPA analysis of the cumulative impacts to water resources, the FFO worked to address the following objectives:

1. To quantify the amounts of water to be used for the APD for direct impacts.
2. To quantify the amounts of water to be used for the entire FFO based in our most current planning documents, including likely sources of water.

59. To do this, the FFO reevaluated the surface use plan of operations as well as the drilling and completion plans from the APDs for the subject wells, and updated the APD information with any subsequent sundries that had been received in the preceding years for the proposed actions in question. Next, BLM contacted the operators of the subject leases and APDs, which had changed from WPX and Encana, to DJR and Enduring Resources, and inquired about their current and future water usage and completion plans. BLM then looked for the best available science regarding the water quantity and quality utilized in oil and gas development in the San Juan Basin. The “2019 BLM New Mexico Water Support Document”, published and posted on July 15, 2019 here:

[https://www.blm.gov/sites/blm.gov/files/2019%20BLM%20NM%20Water%20Support%20Document\\_07122019\\_508.pdf](https://www.blm.gov/sites/blm.gov/files/2019%20BLM%20NM%20Water%20Support%20Document_07122019_508.pdf). Excerpts of a true and correct copy of the 2019 Water Support Document are attached as Exhibit G.

60. The 2019 Water Support Document is based on the assumptions of the 2018 RFDS for the sections regarding the FFO and San Juan Basin. After quantifying use, and



verifying sources using the data found in the APDs, the FFO calculated cumulative effects for water usage per well under analysis, as well as all other wells predicted by the 2018 RFDS with their consumptive water use (4.8 Acre Feet for horizontal wells, .8 Acre Feet for vertical wells) found in the 2019 BLM New Mexico Water Support Document, as well as the well counts and production forecasts from the 2018 RFDS, the FFO projected cumulative water usage, as well as projected reasonable foreseeable future actions based in current operator data. Air quality and greenhouse gas emissions were also updated. All other portions of the document remain unchanged.

61. The new draft analysis document along with an un-signed FONSI were posted from June 28, 2019 through July 10, 2019. One comment from Wild Earth Guardians was received and fully responded to in the appendix of each EA. Decision Records were authored and signed on August 2, 2019. The APDs for the subject wells were then re-authorized on August 2, 2019. A letter notifying affected operators and lease holders was sent on August 2, 2019 documenting the BLM's decision.

62. The BLM also updated its air impacts analysis for the four EAs to include additional downstream and cumulative impacts analysis. From June 29 to July 10, 2019, the BLM published the four EAs online for public comment here: [http://www.blm.gov/nm/st/en/fo/Farmington\\_Field\\_Office/ffo\\_oil\\_and\\_gas/ffo\\_onsites.html](http://www.blm.gov/nm/st/en/fo/Farmington_Field_Office/ffo_oil_and_gas/ffo_onsites.html). The BLM received comments from the WildEarth Guardians, which the BLM addressed. On August 2, 2019, the BLM signed findings of no significant impact (FONSI) for the four EAs.

63. On July 17, 2019, the BLM learned through the Department of Justice that the same Plaintiffs from *Dine CARE I* planned to challenge an additional 32 EAs in a second round of litigation. On July 18, 2019, the BLM contacted Plaintiffs' counsel in an attempt to resolve



this proposed litigation. The parties met on July 24, 2019, but were ultimately unable to reach any agreement. The BLM is in the process of preparing programmatic NEPA analysis regarding cumulative impacts to water and air resources to supplement the 32 EAs challenged by Plaintiffs. The BLM anticipates supplementing the EAs for the 32 challenged EAs by the end of calendar year 2019. The BLM also intends to supplement 125 additional EAs approved by the BLM since the 2014 adoption of the RFDS.

#### **VIII. Status of the APDs associated with the challenged 32 EAs**

64. Operators have submitted APDs seeking to develop the Mancos Shale and Gallup Sandstone formations since 2010. The FFO had received a total of 957 APDs for all producing geologic formations as of October 2012, and some of those are the same APDs at issue in this litigation.

65. Operators have two years to commence drilling after approval of an APD, but may seek a two, one-year extensions, at the discretion of the BLM Authorized Officer. If an operator does not commence drilling within that time, or an extension is not granted, the APD expires and an operator must submit a new APD in order to drill the same well.

66. On or about August 1, 2019, I requested that my staff prepare a spreadsheet listing each EA challenged by Plaintiffs, including the number of APDs proposed by operators and the number of APDs approved by the BLM associated with each of the 32 challenged EAs. At the same time, I requested my staff prepare a map depicting the location of each of the approved APDs challenged by Plaintiffs. On or about August 12, 2019, my staff completed this spreadsheet and map, which I have reviewed and have found to be true and correct representations of the status of the APDs related to the challenged EAs and their locations. True

and correct copies of this map and spreadsheet are attached as Exhibit B (spreadsheet) and

Exhibit C (Map). The statuses of the APDs are as follows:

- AAPD (Approved Application for Permit to Drill). Under this status, the APD has been approved, but no ground disturbing activities or new disturbance/infrastructure has been initiated, and therefore no environmental impacts have taken place. At Approved APD status, only administrative actions have taken place, such as the signing of a Decision Record and APD.
- DRG (Drilling). Under this status, the well pad and road have been built to their maximum drilling configuration (acres of surface disturbance have taken place); the drilling or completion rig is either currently on location, or being switched out for another rig, or is between drilling the well-bore and completing (fracking) the well-bore. Water volumes for drilling and completion are consumed during this time. Air quality may be impacted by heavy equipment and drilling rig equipment. The well will stay in this status until it begins production or is shut in.
- POW (Producing Oil Well). Under this status, the location and well have been built, drilled, completed, hooked into pipelines and tanks, and are producing in paying quantities and reporting production for royalties. Ground disturbing activities have taken place, the well is in "interim-reclamation" status meaning it has had the unnecessary portions of the well pad for production reduced in size. No direct impacts to water or air resources take place during normal production operations.
- PGW (Producing Gas Well). Under this status, the location and well have been built, drilled, completed, hooked into pipelines and tanks, and are producing in paying quantities and reporting production for royalties. Ground disturbing activities have taken place, the well is in "interim-reclamation" status meaning it has had the unnecessary portions of the well pad for production reduced in size. No direct impacts to water or air resources take place during normal production operations.
- OSI (Oil Shut In). Under this status, the well is capable of production and drilling and completion are over. All disturbance activities have already taken place. A well in OSI or GSI status may be undergo work or have mechanical issues under evaluation. No direct impacts to water or air resources take place during normal production operations.
- GSI (Gas Shut In). Under this status, the well is capable of production and drilling and completion are over. All disturbance activities have already taken place. A well in OSI or GSI status may undergo work or have mechanical issues under evaluation. No direct impacts to water or air resources take place during normal production operations.
- WDWSI (Water Disposal Well, Shut In). Under this status, produced water from an on-lease source may be injected down-hole on the same lease in what is called a water injection well or water disposal well. When such a well is shut in and is not disposing liquids, it is considered to be in Shut- In or WDWSI shut in status. These wells would

already have a well pad and any producing equipment, and therefore any environmental impacts to the ground would have already occurred. No direct impacts to water or air resources take place during normal production operations.

67. The spreadsheet shows 39 producing wells (either in POW or PGW status); 2 shut in wells; 17 wells in DRG status; 1 well in WDWSI status; and 42 in AAPD status.

68. The spreadsheet shows a total of 101 approved APDs and 271 contemplated wells. Each EA analyzes the number of wells contemplated by the project proponent. But the project proponent does not always actually submit the number of wells contemplated for a project. As a result, an EA may analyze more wells than have actually been approved or submitted. For example, one EA may analyze impacts of 12 potential future wells because that was the proposed action. But the BLM only approved 3 APDs to-date because the project proponent has only submitted 3 APDs to-date. The project proponent could submit up to 9 more APDs for the project, which have been analyzed by the one EA.

**IX. The BLM's plans to review and revise the 32 EAs at issue and additional EAs**

69. The BLM is currently in the process of analyzing the cumulative impacts of water resources associated with the 3,200 Mancos Shale wells projected by the 2018 RFDS for the 32 EAs challenged by Plaintiffs in their August 1, 2019, Motion for Temporary Restraining Order and Preliminary Injunction. The BLM is also reviewing other projects analyzed by EAs since October, 2014, the date the BLM originally first revised its RFDS for the Mancos/Gallup Formations, to determine if there are ongoing projects whose cumulative impacts to water resources should be supplemented by additional analysis.

70. I am familiar with the impacts that vacating EAs and their associated APDs would have. All impacts described below intensify over time. All impacts are relatively minor if a shut-in or APD approval pause takes place for less than 1-2 months. All impacts (particularly

economic) increase greatly after 2 months. These time estimations are non-exact, and are meant to demonstrate the unknown factor that increased shut-in time will introduce into the management of these resources.

71. **Geologic impacts.** If Mancos/Gallup wells are shut in and our ability to approve any future APDs (regardless of geologic formation) face an injunction, different generations of productive reservoirs will face different risks to continued production.

- a. Older producing formations/reservoirs require wells to be drilled in areas that continue new production and are important to stimulate formation pressures to maintain or increase production for economic rates. Some forms of production require constant flooding or injection to create productive conditions (such as water-flood production). These un-conventional forms of production in these older fields would see decreased production ability, over time.
- b. The BLM's ability to approve sundry requests is vital to the health of the reservoir, and may impact it through contamination or the creation of hazardous conditions if proper mitigation cannot be approved by the BLM for oil and gas infrastructure when necessary.
- c. All formations would see increased volumes of water impeding and invading pore space currently attracting hydrocarbons through low-pressure gradients to the subject wellbores. Those pore spaces will continue to fill with water over time, as production is shut in or not allowed to be continuously developed. Decreasing the productive ability of a field lowers the economic potential and value.

72. **Infrastructure impacts.** Mancos/Gallup wells are modern development. The well itself will likely experience increased water intrusion, making production rates different

once production resumes. If wells are on gas lift, shutting them in can be expensive and returning them to production is not guaranteed. Some wells may be plugged if ordered to be shut in. Shutting-in wells differs from temporarily plugging wells. The economic burden is different as the tools required to accomplish a temporary plug are greater. The greater quantity of time a well or field of wells is left shut-in, the greater chance for harm to occur to the well's ability to produce in the future.

73. **Social/Economic impacts.** San Juan County, where the FFO is located, has an economy that is heavily dependent on oil and gas revenues. In 2014, four of the top ten tax-paying companies in San Juan County were oil and gas related. The County Assessor valued oil and gas production at over \$688 million, and oil and gas equipment at over \$138 million. Oil and gas production and equipment were valued at approximately 22% of the total net taxable value of business activities in the County. Oil and gas production contributed over \$24 million in ad valorem taxes and \$23 million in county tax payments to San Juan County in fiscal year 2012.

74. There are 37,637 acres of Indian Allotted minerals, 103,114 federal minerals, 9,445 state minerals, and 560 fee (private) minerals associated with undivided federal Units within the Mancos/Gallup play in the southern San Juan Basin. The acreage involves 235 Native American Indian Allotted leases and thousands of individual Native American Indian allottees. Although industry may be able to bear the financial strain imposed by the shut-ins, many of the allottees will not. Many allottees rely on the monthly royalty checks to subsist and lack of the monthly income will impose hardships on those families. The impact on the Native American allottees would be lost royalty payments.

75. Future well exploration as a portion of continued development is necessary to continue economic growth in the region. The United States as well as the nation's Native

78. Early data suggests that the oil and gas industry's contribution to the General Fund in FY 2018 may be as high as 32.3%. *See* [https://www.nmoga.org/new\\_mexico\\_tax\\_research\\_institute\\_state\\_and\\_local\\_revenue\\_impacts\\_of\\_the\\_oil\\_and\\_gas\\_industry](https://www.nmoga.org/new_mexico_tax_research_institute_state_and_local_revenue_impacts_of_the_oil_and_gas_industry). In FY 2018, the New Mexico State Land Office reported \$2.2 billion in revenue from oil and gas royalties alone for the state's public schools, universities, and hospitals. Oil and gas is directly responsible for \$493 million for New Mexico's Severance Tax Permanent Fund and \$679 million for the Land Grant Permanent Fund. *See id.* The Severance Tax Permanent Fund serves as an investment fund for severance taxes, allowing that money to be used for future capital projects. The fund annually distributed about \$225 million to the state's general fund in 2020. *See* <https://www.sic.state.nm.us/severance-tax-permanent-fund.aspx>. The Land Grant Permanent Fund provides more than a half-billion dollars in benefits to New Mexico's public schools, universities, and other beneficiaries every year, including \$784.2 million in Fiscal Year 2020. *See* State of New Mexico Land Grant Fund, available at: <http://www.sic.state.nm.us/land-grant-permanent-fund.aspx>.

79. In addition, the oil and gas industry is an important employer in New Mexico. While oil and gas production revenue is primarily generated in the southeastern and northwestern regions of the state, the revenue from oil and gas production benefits all counties in New Mexico through General Fund disbursements, capital funding projects, gross receipts taxes, and ad valorem taxes that go to counties.

80. An injunction would also have national effects. Between 2003 and 2013, oil and gas development in the FFO region generated \$5.2 billion dollars in federal royalties. The preliminary injunction would result in a reduction in those royalties. Royalties to the State of New Mexico are deposited in the general fund, where they make up about 15 percent of total

general fund revenue. In addition, an injunction would reduce the amount of domestic oil and gas produced in America, resulting in the need for increased foreign oil and gas imports.

81. There are also 2,573 active federal leases to private companies on BLM-managed lands in the San Juan Basin comprising 1,819,468 acres, with lease issuance dating back to 1948. Companies that purchased these leases would also suffer economic harms from a suspension of development, including the lost opportunity for a return on their investment in the lease.

82. The local communities in New Mexico are supported by the oil and gas industry as attractors of jobs with living wages.

83. The statements made in this declaration are based upon my personal knowledge, or upon information available to me in my official capacity, and are true and correct to the best of my knowledge and belief.

84. I declare under penalty of perjury pursuant to 28 U.S.C § 1746 under the laws of the United State of America that the foregoing is true and correct.

A handwritten signature in cursive script, reading "Mark Matthews".

Mark Matthews  
BLM Farmington  
District Manager (Acting)  
August

**AUG 14 2019**